AMENDMENT UNDER 37 C.F.R. § 1.111 **PATENT APPLICATION**
Appln. No. 10/039,333

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of anisotropically etching a layer ~~containing~~ of substantially pure tungsten, the layer being disposed on a substrate and having a patterned hard mask layer disposed thereon, the method comprising:

placing the substrate in a plasma zone;

introducing into the plasma zone a process gas mix comprising NF_3 and Cl_2 ; and

forming a plasma from the process gas mix to etch the ~~tungsten containing~~ layer of substantially pure tungsten substantially anisotropically and at an etch rate greater than the rate at which the hard mask layer is etched.

2. (Currently Amended) The method of claim 1, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at an etch rate at least twice the rate at which the hard mask layer is etched.

3. (Currently Amended) The method of claim 1, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at an etch rate that is about 2.5 greater than the rate at which

the hard mask layer is etched.

4. (Original) The method of claim 1, wherein the process gas mix is introduced with a volumetric flow ratio of NF_3 and Cl_2 that is selected to provide etched features having a critical dimension loss of less than 4% and having sidewalls that form angles of at least about 88 degrees with a surface of the substrate.

5. (Original) The method of claim 1, wherein the gas mix is introduced with a volumetric flow ratio of NF_3 : Cl_2 is in the range of from about 1:1 to about 1:2.5.

6. (Original) The method of claim 1, wherein the gas mix is introduced with a volumetric flow ratio of NF_3 : Cl_2 is in the range of from about 1:1.3 to about 1:2

7. (Original) The method of claim 1, wherein the process gas mix consists essentially of NF_3 and Cl_2 .

8. (Original) The method of claim 1, wherein the process gas mix further comprises a passivator gas.

9. (Original) The method of claim 1, wherein the hard mask layer comprises silicon nitride.

10. (Currently Amended) A method of etching a ~~tungsten containing~~ layer of substantially pure tungsten that is covered with a patterned hard mask layer and disposed on a substrate, using a process chamber that has process electrodes therein and an inductor coil adjacent to the process chamber, the method comprising:

placing the substrate on which the ~~tungsten containing~~ layer of substantially pure tungsten is disposed into the process chamber;

introducing into the process chamber, a process gas mix comprising NF_3 and Cl_2 ; and

ionizing the process gas mix to form plasma ions that energetically impinge on the ~~tungsten containing~~ layer of substantially pure tungsten and the hard mask layer by applying RF energy to the inductor coil and applying RF energy the process electrodes,

wherein the ~~tungsten containing~~ layer of substantially pure tungsten is substantially anisotropically etched at an etch rate greater than the rate at which the hard mask layer is etched.

11. (Currently Amended) The method of claim 10, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at an etch rate at least twice the rate at which the hard mask layer is etched.

12. (Currently Amended) The method of claim 10, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at an etch rate that is about 2.5 greater than the rate at which the hard mask layer is etched.

13. (Original) The method of claim 10, wherein the process gas mix is introduced with a volumetric flow ratio of NF_3 and Cl_2 that is selected to provide etched features having a critical dimension loss of less than 4% and having sidewalls that form angles of at least about 88 degrees with a surface of the substrate.

14. (Original) The method of claim 10, wherein the volumetric flow ratio of NF_3 : Cl_2 is from about 1:1 to about 1:2.5.

15. (Original) The method of claim 10, wherein the volumetric flow ratio of NF_3 : Cl_2 is from about 1:1.3 to about 1:2.

16. (Original) The method of claim 10, wherein the volumetric flow ratio of NF_3 : Cl_2 is from about 1:1 to about 2:1.

17. (Original) The method of claim 10, wherein the volumetric flow ratio of NF_3 : Cl_2 is from about 1.3:1 to about

2:1.

18. (Original) The method of claim 10, wherein the process gas mix consists essentially of NF_3 and Cl_2 .

19. (Currently Amended) A method of etching a ~~tungsten containing~~ layer of substantially pure tungsten that is covered with a patterned hard mask layer and disposed on a substrate, using a process chamber that has process electrodes therein and an inductor coil adjacent to the process chamber, the method comprising:

placing the substrate on which the ~~tungsten containing~~ layer of substantially pure tungsten is disposed into the process chamber;

introducing into the process chamber, a main etch process gas mix comprising NF_3 and Cl_2 ;

ionizing the main etch process gas mix to form plasma ions that energetically impinge on the ~~tungsten containing~~ layer of substantially pure tungsten and the hard mask layer by applying RF energy to the inductor coil and applying RF energy the process electrodes, wherein the ~~tungsten containing~~ layer of substantially pure tungsten is substantially anisotropically etched at a main etch rate greater than the rate at which the hard mask layer is etched;

introducing into the process chamber, an over etch process gas mix comprising Ar and Cl_2 ; and

ionizing the over etch process gas mix to form plasma ions that energetically impinge on the ~~tungsten containing~~ layer of substantially pure tungsten and the hard mask layer by applying RF energy to the inductor coil and applying RF energy the process electrodes, wherein any remaining portion of the ~~tungsten containing~~ layer of substantially pure tungsten that is not masked by the hard mask layer is substantially anisotropically etched away.

20. (Currently Amended) The method of claim 19, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at a main etch rate at least twice the rate at which the hard mask layer is etched.

21. (Currently Amended) The method of claim 19, wherein the layer of substantially pure tungsten ~~containing layer~~ is etched at a main etch rate that is about 2.5 greater than the rate at which the hard mask layer is etched.